Hydrogen
Energy Week – Liquid Hydrogen Storage

Cooler By Design.
Global Leader in Hydrogen Tanks

- The leader in liquid hydrogen storage tanks globally
  - FCEV fuel stations, FC forklift fueling, liquefaction, aerospace and industrial applications
  - >900 LH2 bulk tanks built
  - Complete line of liquid hydrogen storage tanks – 3,000 to 175,000 gallons (11 to 662 m³) and up
  - Engineering expertise for unique applications

- Superior performance and quality
  - Chart Super Insulation
  - Pipe layouts designed with operations and maintenance in mind
  - Helium Mass-Spectrometer leak test detection used on all tanks
  - ASME Section IX certified welders
H2 Storage Bullet Sizes

Shop-built “bullet” storage tanks come in standard and custom sizes

From 3,000 to 250,000 gallons

Largest vertical up to 50,000 gallons volume

Largest shop-built LH2 tank to-date is 170,000 gallons
Cryogenic tank insulation systems

- OXY/NIT/AR tanks usually have perlite
- H2 tanks usually have multi layer insulation (MLI): aluminum foil and glass fiber material
- Lower vacuum levels maintained for MLI as compared to perlite
- Use of Mylar should be prohibited
- Thermal performance noted in %/day
  - Roughly 5-6 times higher for a given tank nitrogen: hydrogen
  - Tested by venting Normal Evaporation Rate (NER)

Multi Layer insulation (MLI) is sometimes referred to as superinsulation (SI)
Reference PFD for bullet H2 plant tanks
Shipping Considerations
Thank you!